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APPLICATION

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TECHNICAL FIELD

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5 A company normally orders goods by sending a purchase order,
document hereinafter called a purchase order, to a supplier
listing the goods ordered, their quantity, desired delivery date,
and a previously agreed-to price. Other data may also be part of
the purchase order. It is also well known in the art to send the
purchase order by mail, fax, e-mail, or electronically such as
over telephone lines using a technology known as EDI 850. If
sent in hardcopy form by mail or fax, the purchase order may be
entered into a database manually using a keyboard, mouse pointer,
10 touch screen or such devices which are commonly used to enter
data. It is also known to enter purchase orders electronically
through the internet using techniques generically known as e-
business. Both the company and supplier typically keep a copy
either in electronic or hardcopy form for their records.

15 In general procurement and many other procurement
environments, the price paid after delivery is based on the
purchase order, a process referred-to as GR/IR. However, it is
also known in the procurement arts to use a pricing strategy
based on validity dates with control indicators such as ship
date, delivery date, and goods receipt date. This strategy
20 usually requires purchase orders to be set up as good receipt
base invoice verification, referred to as GR/IV. In this case
the actual price to be paid is not determined until after the
goods are received.

25 Regardless of the pricing strategy, the supplier sends an
invoice to the company requesting payment. This is usually sent
using the same techniques described above for sending purchase
orders. Often the invoice arrives for processing before a
corresponding goods received receipt(GRR). The GRR may also be
30 called a packing list, bill of lading, shipper or preferably

delivery note. The processing of the invoice prior to receipt of goods must necessarily be handled differently when a GR/IV pricing strategy is used. In particular, based on various accounting rules, no processing is possible with such GR/IV invoices as compared to GR/IR. The necessity of having two invoice processing systems is for large companies costly and error prone. It would therefore be an improvement in the art of invoice processing to be able to process GR/IV invoices in a facile manner and in a manner which utilizes GR/IR processing capability which is usually available and operating effectively in a company.

OBJECTS AND SUMMARY OF THE INVENTION

It is therefore, a principal object of the present invention to enhance the invoice processing art by providing a processing system with enhanced capabilities.

It is another object to provide a method of processing invoices which can be accomplished in a facile manner.

It is yet another object to provide a data processing apparatus with enhanced capability for processing invoices.

It is a further object to provide a computer program product for enhanced processing of invoices.

It is another object to provide computer executable process steps for performing enhanced invoice processing.

These and other objects are attained in accordance with one

embodiment of the invention wherein there is provided an invoice processing system, comprising, entry means for entering and storing invoices, a database tool having one or more goods received receipts and one or more purchase orders, matching tool
5 means coupled to the entry means and the database tool for periodically inquiring the database tool to determine if a new goods received receipt is present, performing a logical three-way match between each invoice, the one or more goods received receipts, and the one or more purchase orders, including
10 generating logical results of the three-way match, and a transfer tool for transferring the logical results from the matching tool means to the database tool, including transferring each stored invoice for which a match was found by the matching tool means.

In accordance with another embodiment of the invention-there is provided a method of processing invoices, comprising the steps of, entering and storing invoices in an invoice processing tool, providing a database tool having one or more goods received receipts and one or more purchase orders, periodically inquiring the database tool to determine if a new goods received receipt is present, performing a logical three-way match between each
20 invoice, the one or more goods received receipts, and the one or more purchase orders including generating logical results of the three-way match, and transferring the logical results from the invoice processing tool to the database tool including
25 transferring each stored invoice for which a match was found by performing the logical three-way match.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG.1 illustrates the elements of one embodiment of the invention;

FIG.2 is a flowchart of the system of the invention; and

5 FIG.3 illustrates a preferred way to preform a three-way match.

BEST MODE FOR CARRYING OUT THE INVENTION

For a better understanding of the present invention, together with other and further objects, advantages and capabilities thereof, reference is made to the following disclosure and the appended claims in connection with the above-described drawings.

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In FIG. 1 there is shown an invoice processing system 10. Entry means 12 and 14 are used for entering and storing invoices 20. The invoice may be received electronically via EDI 850, e-mail, or other electronic connection and entered automatically without manual intervention. It may also be entered manually after receipt in hardcopy form via mail, fax, overnight express or courier delivery. Manual entry may use keyboard, mouse or trackball pointer, touch screen or other methods known in the data processing arts. Invoices 20 are stored in a computer memory which may be an active memory such as DRAM, SRAM, FLASH or EPROM. The invoices may also be stored on a hard disk, floppy disk, CD ROM, DVD or any other storage medium.

Database tool 18 has one or more goods received receipts 22 and one or more purchase orders 24. The database tool may be a computer based software tool having two databases, one for the goods receipts 22 and a second for the purchase orders 24.

5 Database tool 18 may be a custom designed tool appropriate to the company in which it is used, or it may be any commercially available purchasing tool capable of having one or more goods received receipts 22 and one or more purchase orders 24. The SAP, B2B, procurement tool available from the SAP AG Company of Neurottstrasse 16 69190 Waldorf, Germany is one such purchasing tool.

Matching and transfer tool 16 is coupled to both the invoice entry processing tool 14 and database tool 18. It is preferably a software tool, which may run on the same processor as either or both tools 16 and 18 but may also run on a separate or remote processor. The matching tool 16 periodically inquires database tool 18 to determine if a new goods received receipt is present.

20 Matching tool 16 may also comprise specially designed matching hardware or any combination of hardware and software capable of performing a matching function between two or more numbers or variables. In particular, matching tool 16 is capable of performing a three-way match such as will be described below in connection with FIG. 3.

For each invoice for which a match is found, transfer tool 16 transfers the invoice from storage in the invoice entry tool 14 to database tool 18 along with the results of the logical three-way match. Transfer may be done with software read, move, and store instructions in the case where all three tools, the invoice tool, transfer tool, and database tool are running on a shared processor. Transfer may also be done over a communicating connection such as a LAN, telephone line, link, or radio frequency waves, when one or more of the three tools is located remotely. Database tool 18 may then proceed to authorize payment to the vendor or perform other processing tasks well known in the procurement arts.

In FIG. 2 there is shown a flowchart describing the process steps in accordance with another embodiment of the invention. Starting at box 30, invoices are entered and stored in step 32 in an invoice processing tool. Various devices and structures for entering and storing have been described above. The invoice entered may comprise data such as company code, document currency, vendor number, document number, document date, items, and item amounts. In step 34 a database tool having goods received receipts and purchase orders is provided. Such tools are described above. In step 36 the database tool is periodically inquired to determine whether a new goods received receipt is present. If one or more are present, then in step 38 a logical three-way match is performed for each stored invoice. One way of performing a three-way match shown in Fig. 3 is described below. When a match is found, the invoice and logical results are transferred from the invoice processing tool to the database tool in step 40.

5 In FIG. 3 there is shown a detailed flowchart depicting one
way of performing a logical three-way match of step 38 in FIG. 2.
The process starts at box 50 after it has been determined that a
new GRR is present in the database tool. In step 52, for each
invoice, it is determined whether there is one or more GRR's
having the same number e.g. delivery note number (#) as the
delivery note number on the invoice. Also does the unit price on
the GRR(s) equal the unit price specified on the invoice.
Finally is the total product quantity on the one or more GRR's
sufficient to satisfy the product quantity listed on the invoice.
10 If all three conditions are satisfied, this is the ideal case and
the stored invoice is transferred from the invoice processing
tool to the database tool in step 40 as previously described. In
addition, the logical results indicating all three conditions
were satisfied are also transferred.

When handling a large number of orders, receipts, and
invoices it frequently happens that not all three conditions are
satisfied. In step 54, for example, it is determined that the
unit price shown on one or more GRR does not equal the unit price
on the invoice, but everything else is satisfied. Unit prices
may not match for many reasons including a change in price upward
or downward between the time units were shipped by the supplier
and the invoice was sent. There may be a clerical error or
perhaps a price change was not communicated to all parties at the
same time. Whatever, the reason for the unit price difference,
25 the invoice and logical results are again transferred from the
invoice processing tool to the database tool in step 40. In this
case the logical results will indicate to the buyer in purchasing
that a price reconciliation must be performed as is customarily
30 done and the supplier paid.

In step 56, a third pass of the logical three-way notch determines that the number on one or more GRR(s) does not match the number on the invoice however all remaining conditions are satisfied. Again, a transfer of the invoice and logical results is performed in step 40.

In step 58, at least one GRR number and at least one GRR unit price does not match the invoice, however the total product quantity is sufficient to satisfy the quantity indicated on the invoice. In this case the invoice processing tool chooses GRR's by date to satisfy the quantity indicated on the invoice in step 62 and then transfers the invoice and logical results in step 40. The logical results include information on which GRR's were selected in step 62.,

Finally, if none of the matches in steps 52, 54, 56 or 58 are satisfied, then the matching tool will loop back and periodically inquire the database tool of determine if a new GRR is present in step 60. In a preferred embodiment, this periodic inquiring may continue for up to 45 days after which the invoice will be removed from the invoice processing tool and returned to the supplier.

While there have been shown and described what are at present considered the preferred embodiments of the invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the scope of the invention as defined by the appended claims.